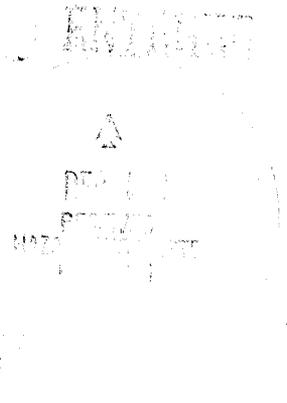




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733



DEC 18 1996

Mr. Benito Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044A Galisteo Street
Santa Fe, NM 87505

SS

Dear Mr. Garcia:

The Environmental Protection Agency (EPA) has reviewed the final draft Appendix I Phase 2 RFI SAP submitted by Kirtland Air Force Base (Kirtland) on July 8, 1996. The EPA also reviewed the August 20, 1996, update submitted to the New Mexico Environment Department by Kirtland concerning the results of the geophysical surveys. Enclosed for your review and consideration are EPA's comments concerning the draft work plan.

If you have any questions, please contact Ms. Nancy Morlock of my staff at (214) 665-6650.

Sincerely yours,


David W. Neleigh, Chief
New Mexico-Federal Facilities

cc: Mr. Steve Pullen
New Mexico Environment Department



EPA Comments
Appendix I Phase 2 Final Draft RFI SAP
Kirtland Air Force Base

GENERAL COMMENTS

1. Kirtland should submit a copy of SOP A1.7, Borehole and Sample Logging, for NMED and EPA review.
2. To the extent that the activities proposed in Kirtland's "Long-Term Groundwater Monitoring Plan" may supplement the investigation of the Appendix I solid waste management units, Kirtland should summarize those activities in the Phase 2 Work Plan.
3. Kirtland should explain the basis for not collecting trip blanks during the Phase 2 investigation. EPA recommends the following approach:
Duplicates - one in ten
Field Blanks - one in ten
Trip Blanks - for VOAs in each media per sample shipment
4. The Explosives Ordnance Disposal (EOD) Range (SWMU 6-19) has been proposed for removal from the RCRA/HSWA permit (see EPA correspondence dated 5/26/95 and Kirtland correspondence dated 5/11/96). The EPA concurs with the removal of SWMU 6-19 from Kirtland's permit based upon the fact that it is part of an active site and will be investigated upon closure of the open burning site. The closure plan has been modified accordingly.
5. The use of TRPH as a screening tool is acceptable, but for the RFI testing should be conducted for hazardous constituents through VOC, SVOC, metals, PCB, etc. analyses.
6. Is it possible for Kirtland to review copies of pre-1975 purchase records in order to better determine what types of chemicals were possibly disposed of in the landfills?

SITE-SPECIFIC COMMENTS

1. Section 1.1, Background, 4th Paragraph on Page 1-2 and 1st and 2nd Paragraphs on Page 1-4
In the fourth paragraph, Kirtland states that "At the completion of the RFI, conceptual designs for cover systems at landfill sites will be developed and presented to the EPA for review." Please note, however, that all corrective action submittals must be submitted to the New Mexico Environment Department. The EPA should receive a copy of all submittals. This same situation occurs in the first and second paragraphs on page 1-4. Kirtland should correct the references in these sections.
Source: Best Professional Judgement

2. **Figure 2-1, Project Approach for Landfill Sites, Page 2-2**
According to this figure, a presumptive remedy will be implemented at landfills where action levels are exceeded. The figure should be modified to show that a CMS and/or a presumptive remedy will be implemented, since NMED has the authority to require a CMS and it is premature to discount the need for a CMS, particularly before the RCRA Facility Investigation has been completed.
Source: Best Professional Judgement

3. **Section 2.2.2, General Approach to Landfill Investigations, Page 2-4, 1st Bullet**
It is unclear why soil samples will not be collected until a depth of approximately 40 feet below grade at the landfill sites. Does Kirtland expect to encounter 40 feet of landfill cover? The EPA recommends that more than five samples be collected from each 120 foot borehole.
Source: Best Professional Judgement

LANDFILL 1, SWMU 6-1

4. **Figure 2-3, Sampling Locations at LF-01 (SWMU 6-1), Page 2-9**
 - a. Kirtland depicts only one previous soil boring location on this figure (at the eastern edge of the landfill). However, according to the RFI Report, eight boreholes rim the landfill. Kirtland should revise the figure to show all eight boreholes.
Source: Best Professional Judgement

 - b. Kirtland states in the last paragraph on page 2-8 that only one monitoring well DM-01 was sampled during the Stage 2A RFI. Which monitoring well on Figure 2-3 is DM-01? The monitoring wells in the figure are numbered 0110, 0111, 0112, 0113, 0114, 0115, and 0117. Monitoring well DM-01 apparently has a 50 foot screened interval.
Source: Best Professional Judgement

5. **Section 2.2.3.2, Summary of Previous Investigations, Page 2-8, 3rd Paragraph**
Kirtland states that only one of the seven monitoring wells surrounding the perimeter of Landfill 1 was sampled during the Stage 2A RFI. Have the other wells been sampled since that time? If so, what were the results? The EPA recommends that the wells be sampled on a quarterly basis. Results should be sent to NMED and EPA. Additionally, because groundwater flows to the northeast, EPA maintains that an additional groundwater monitoring well, located between wells 0110 and 0115, should be installed.
Source: Best Professional Judgement

6. **Table 2-1, LF-01 Soil Sample Results, Pages 2-11 to 2-12**
It may be helpful for Kirtland to state the percent samples that were hits, as well as the number of detected hits, on tables such as Table 2-1.
Source: Best Professional Judgement

LANDFILL 2, SWMU 6-2

7. **Figure 2-4, Sampling Locations at LF-02 (SWMU 6-2), Page 2-26**
The five boreholes from the Stage 2A RFI are not shown on this figure. If the borehole locations are the same as the monitoring well locations (which is probably the case), then Kirtland should revise the legend to show that the borehole and monitoring wells are co-located.
Source: Best Professional Judgement
8. **Section 2.2.4.2, Summary of Previous Investigation, Page 2-25, 3rd Paragraph**
Kirtland states that "Data from the groundwater analyses suggest little evidence of groundwater contamination." Kirtland should explain which monitoring wells were sampled to provide the basis for this statement. The text only mentions that well DM-02 was sampled, and this well is located at the northeastern portion of the landfill. Groundwater reportedly flows to the northwest. The EPA recommends that the monitoring wells be sampled on a quarterly basis. Results should be sent to NMED and EPA.
Source: Best Professional Judgement

LANDFILL 3 (SWMU 6-3)

9. **Section 2.2.5.3, Sampling Rationale, Page 2-34**
The EPA maintains that further groundwater investigation is needed for this landfill. No groundwater monitoring wells are located nearby to adequately determine the groundwater flow direction, and the additional investigative activities proposed by Kirtland in this section do not include groundwater.
Source: Best Professional Judgement

LANDFILLS 4, 5, 6 (SWMU 6-4)

10. **Section 2.2.6.3, Sampling Rationale, Page 2-42**
The EPA maintains that further groundwater investigation is needed for these landfills. Kirtland's upgradient well is located approximately 300 feet southeast of the site, across an inferred fault. The nearest downgradient well is west of the site, over 2,000 feet away and on the northwest side of the inferred fault. The effect of the fault on hydrogeology and contaminant transport beneath this site is unknown.

Monitoring wells should be installed on both sides of the inferred fault in order to determine the effect of the fault.

Source: Best Professional Judgement

11. **Figure 2-6, Sampling Locations at LF-08 (SWMU 6-4), Page 2-44**

Kirtland should show the location of the inferred fault on this figure.

Source: Best Professional Judgement

LF-09 - ABANDONED LANDFILL (SWMU 6-10)

12. **Section 2.2.7.3, Sampling Rationale, Page 2-46**

a. Kirtland states that "The goal of investigative activities at LF-09 is to determine if waste disposal activities occurred at this site." The EPA recommends that this statement be revised to state that the nature and extent of contamination will be defined during the investigation. As stated, Kirtland's approach could result in a "Phase 3" investigation, which will take additional time to complete. The EPA recommends that the entire investigation be completed during the Phase 2 investigation.

Source: Best Professional Judgement

b. No soil or groundwater sampling have been collected at this site. The EPA recommends that soil borings be drilled within and outside of the site boundaries to characterize the soil, geology, and possible contamination at this site. At a minimum, soil samples should be analyzed for VOCs, SVOCs, metals, herbicides, and pesticides. These soil borings should be installed during the Phase 2 investigation, regardless of the results of the geophysical survey (Note: according to Kirtland's August 20, 1996 update, no waste disposal sites or trenches were found during the geophysical survey).

Source: Best Professional Judgement

LF-15 - LANDFILL B (SWMU 6-8)

13. **Section 2.2.8.3, Sampling Rationale, Page 2-52**

EPA recommends that one of the two proposed soil borings be completed as a groundwater monitoring well, since groundwater is shallow and no other information concerning groundwater is available for this site. Additional monitoring wells should be installed outside of the landfill boundary to characterize the hydrogeology and determine the nature and extent of any groundwater contamination.

Source: Best Professional Judgement

14. Figure 2-8, Sampling Locations at LF-15 (SWMU 6-8), Page 2-54 It appears that this figure is labeled incorrectly. Five soil borings were installed during the previous investigation, but the figure depicts five groundwater monitoring wells and no soil borings. Kirtland should correct the figure.

Sources: Best Professional Judgement

LF-18 - LANDFILL A (SWMU 6-7)

15. Section 2.2.9.3, Sampling Rationale, Page 2-56

a. Please see comment 11(a), above, concerning the use of a multi-phased investigation. The EPA recommends that the nature and extent of any contamination at this site be determined during this (the Phase 2) investigation.
Sources: Best Professional Judgement

b. Kirtland proposes to install a 500 foot, five foot deep test pit. Kirtland should explain how these design parameters were selected. Some of the other landfills described in this work plan are said to contain up to 30 or 40 feet of fill. If the field reconnaissance information is incorrect and this site was used for landfilling activities, then the proposed five foot deep test pit may be too shallow.

Sources: Best Professional Judgement

16. Section 2.2.9.5, Summary of Chemical Data Collection Activities, Page 2-58

Kirtland states that "At present, collection of chemical data is not expected." However, based upon the results of previous sampling, EPA recommends that additional sampling be conducted. For example, manganese was detected in 18 samples at concentrations up to 388 ppm. Kirtland should propose a more comprehensive investigative plan for this site.

Source: Best Professional Judgement

LF-20 - MANZANO LANDFILL (SWMU 6-29)

17. Figure 2-10, Sampling Locations at LF-20 (SWMU 6-29), Page 2-64

None of the previous soil borings were located in the southern portion of this landfill. The EPA recommends that at least one of the two proposed soil borings be located in the southern part of the landfill. Additionally, no ground water investigation is proposed for this site. The EPA recommends that Kirtland install groundwater monitor wells both within and outside the site boundary in order to characterize the hydrogeology and any groundwater contamination at this site.

Source: Best Professional Judgement

LF-44 - FILL AREA SOUTHEAST OF THE SEWAGE LAGOONS (SWMU 6-11)

18. **Section 2.2.11.1, Site Description, Page 2-66**

Are any historic aerial photographs available for this site? Also, this type of landfill raises concerns of asbestos. Kirtland should discuss what measures have been taken to verify that the landfill does not contain asbestos.

Source: Best Professional Judgement

19. **Section 2.2.11.3, Sampling Rationale, Page 2-66**

Kirtland states that "The maximum depth of the landfill has been identified at eight feet below ground surface", yet previous samples were only collected to a depth of three feet. Kirtland should explain the basis for this statement. Kirtland should also explain the rationale behind limiting the four proposed boreholes to a depth of 40 feet below grade.

Source: Best Professional Judgement

LF-45 - EXPLOSIVE TEST SITE/UNNAMED DUMP (SWMU 6-15)

20. **Section 2.2.12.3, Sampling Rationale, Page 2-72**

The EPA recommends that the soil samples be analyzed for VOCs, SVOCs, metals, herbicides, pesticides, and explosives. EPA also recommends that a few deeper boreholes be completed outside of the test pit, but within the overall site boundary, since the previous sampling effort was limited to near-surface soils.

Source: Best Professional Judgement

OT-28 - McCORMICK RANCH (SWMU 6-31)

21. **Section 2.3.2.3, Sampling Rationale, Page 2-79**

More than one round of ground water samples should be collected from the two proposed monitoring wells. Also, Kirtland should explain what additional sampling will take place if contamination is detected during the surface sampling activities. Lastly, EPA recommends that Kirtland conduct a geophysical survey to delineate areas of magnetic anomalies. The geophysical survey should be conducted prior to any other sampling or monitoring well placement.

Source: Best Professional Judgement

OT-29 - EXPLOSIVES ORDNANCE DISPOSAL (EOD) RANGE (SWMU 6-19)

22. Please see General Comment No. 4 concerning the removal of this SWMU from the permit.

Source: Best Professional Judgement

OT-46 - LAKE CHRISTIAN (SWMU 6-22)

23. Section 2.3.4.3, Sampling Rationale, Page 2-92

The EPA recommends that soil borings be drilled underneath and outside of the site boundaries in order to characterize the soil, geology, and contaminants below the site. The soil borings should extend to the water table so that a full vertical profile and sufficient contaminant characterization is provided.

Source: Best Professional Judgement

FT-13 - KIRTLAND FIRE TRAINING AREA (SWMU 6-16)

24. Section 2.4.1.1, Site Description, Page 2-99

In the second paragraph, Kirtland discusses the status of the two storm drains. But in order to make the work plan more comprehensive for the public and other audiences, Kirtland should include a short paragraph discussing the investigative status of the storm drains, ie. What appendix are they included in? What were the results of any previous investigations?

Source: Best Professional Judgement

25. Section 2.4.1.2, Summary of Previous Investigations, Page 2-100, 1st Paragraph

Because several constituents were detected in the background borings, EPA maintains that the extent of contamination at this site has not been adequately determined.

Source: Best Professional Judgement

26. Section 2.4.1.3, Sampling Rationale, Page 2-100

a. Kirtland proposes to install five boreholes to a depth of 60 feet below grade. However, due to the fact that the graded area is sandy, EPA recommends that the borings be installed to a minimum depth of 100 feet below grade. Samples should be collected at regular intervals (for example, every 10 feet), instead of two samples per borehole as currently proposed.

Source: Best Professional Judgement

b. In the cover letter that accompanied this work plan, Kirtland proposes a change to the work plan: soil boring "C" will be relocated 250 feet to the northwest to investigate the lateral extent of contamination. However, because the area of the concrete slab (where boring "C" is currently located) contains elevated levels of contamination, EPA recommends that boreholes "B" and "C" be completed as originally proposed, and that an additional borehole "F" be completed 250 feet to the northwest.

- c. The existing ground water monitoring well appears to be located downgradient of the mock up, but not downgradient of the two unlined pits (based upon a northeasterly ground water flow direction). The EPA recommends that Kirtland install one or two additional ground water monitoring well downgradient of the site and outside of the site boundary. At least two rounds of samples should be analyzed from both the new and existing well.
Source: Best Professional Judgement

27. Figure 2-16, Sampling Locations at FT-13 (SWMU 6-16)
Kirtland should show the location of the two unlined pits of this figure.
Source: Best Professional Judgement

WP-16 - MANZANO SEWAGE TREATMENT FACILITY (SWMU 6-24)

28. Section 2.4.2.3, Sampling Rationale, Page 2-109
- a. The EPA has some concerns with the tentative post-excavation confirmatory sampling plan, which is briefly discussed in this section. EPA recommends that soil samples be analyzed for VOCs, SVOCs, metals, herbicides, pesticides, and PCBs by an off-site laboratory, regardless of the results of the headspace readings.
Source: Best Professional Judgement
- b. It is possible that buried drums exist in the area of the lagoons (drums were observed by EPA during a 1988 site visit). For this reason, EPA believes that a geophysical survey should be conducted.
Source: Best Professional Judgement
29. Figure 2-17, Sampling Locations at WP-16 (SWMU 6-24)
The eight proposed DPT holes are not depicted on this figure. Kirtland should revise the figure to show the proposed location of the boreholes.
Source: Best Professional Judgement